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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,854	01/30/2004	Yusuke Fukuchi	03500.000091.	4133

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EXAMINER	
BERRY, RENEE R	
ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/766,854	FUKUCHI, YUSUKE	
	Examiner	Art Unit	
	Renee R Berry	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/10/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US Patent No. 6,399,520 to Kawakami et al.

In regards to claim 1, Kawakami teaches a processing method for forming an insulated film on a surface of a substrate to be processed, through an oxynitriding treatment, said processing method comprising the steps of: nitriding a surface of the substrate by irradiating plasma containing nitrogen atoms onto the substrate; and oxidizing the surface of the substrate, which has been nitrided, by irradiating plasma containing oxygen atoms at column 17, lines 9-20.

In regards to claim 2, Kawakami teaches a processing method according to claim 1, wherein said nitriding and oxidizing steps place the substrate on a susceptor, temperature of the susceptor being maintained at 600 ^{o}C or lower at column 8, lines 65-67 to column 9, lines 1-3.

In regards to claim 3, Kawakami teaches a processing method according to claim 1, wherein said substrate include silicon, and said nitriding and oxidizing steps control a

process time so that the insulated film has an effective oxide thickness nm or smaller at column 10, lines 43-53.

In regards to claim 4, Kawakami teaches a processing method according to claim 1, wherein said nitriding step uses, as process gas, gas that includes at least one of N_2, NH: and N_2H_4 or one which is diluted with at least one of He, Ne, Ar, Kr and Xe, mixed gas of $H_2 + N_2$ or the one which is diluted with at least one of He, Ne, Ar, Kr and Xe at column 10, lines 43-56.

In regards to claim 5, Kawakami teaches a processing method according to claim 1, wherein said oxidizing step gas uses, as process gas, gas that includes at least one of 0_2, O_3, H_2O, and H_2O_2 or the one which is diluted with at least one of He, Ne, Ar, Kr, Xe and N_2 at column 10, lines 43-53

In regards to claim 7, Kawakami teaches a processing method according to claim 1, wherein said substrate includes silicon, and said oxidizing step controls an oxygen atom concentration so that a nitrogen atom concentration is or smaller position near an interface between the silicon and silicon oxynitride film in the insulated film at column 10, lines 43-53.

In regards to claim 8, Kawakami teaches a processing method according to claim 1, wherein said nitriding step controls a process time so that the insulated film contains the nitrogen atoms between 3×10^{14} cm^{-2} and 1.5×10^{15} cm^{-2} that converted surface density at column 13, lines 15-20.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renee R Berry whose telephone number is (571) 272-1774. The examiner can normally be reached on M-F 9-5:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RRB

September 20, 2004

GENE N. AUDUONG
PRIMARY EXAMINER